SONY

3-756-186-21 (2)

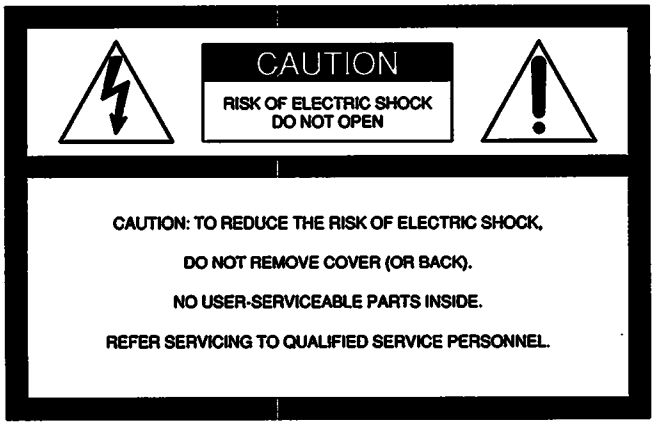
Stereo Cassette Deck

Operating Instructions

TC-K909ES

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Owner's Record

The model and serial numbers are located on the rear of the unit. Record the serial number in the space provided below. Refer to them whenever you call upon your Sony dealer regarding this product.

Model No. TC-K909ES Serial No. _____

INFORMATION

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

— Reorient or relocate the receiving antenna.
— Increase the separation between the equipment and receiver.
— Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
— Consult the dealer or an experienced radio/TV technician for help.

CAUTION

You are cautioned that any change or modifications not expressly approved in this manual could void your authority to operate this equipment.

Table of Contents

Features

For higher quality recording/playback
- **The Dolby HX PRO* system** which improves the linearity of the tape's high-range response during recording.
- **B, C and S type Dolby NR* systems** which reduce tape noise.
- **Bias and recording level calibration** which ensures optimum recording conditions to bring out the best in every tape.
- **Three-head system (separate recording, playback and erase heads)** which allows you to instantly check the recorded sound while recording is in progress.
- **Laseramorphous heads** providing superior magnetic induction for minimal sound deterioration.
- **Quartz Locked Direct Drive** that reduces vibration from external sources.
- **Sapphire bearing** to enhance stability in motor rotation for clear sound reproduction.
- **Closed Loop Dual Capstan** for improved stability of tape running at tape heads.
- **Ceramic cassette holder** for improved stability of tape running during playback and recording.

For your convenience
- **The AMS and Memory Play functions** which provide easy access to a desired selection.
- **Timer-activated playback and recording** through the use of an optional timer.

For easier operation
- **Easy-to-read linear counter** which shows the elapsed recording or playing time.

* Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.
"DOLBY", the double-D symbol DD and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

Precautions

On safety

- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it will not be used for a long time. To disconnect the cord, pull it out by grasping the plug. Never pull the cord itself.

On operation

- When the unit is not used, turn the power off to conserve energy and to extend the useful life of your unit.
- Because of a safety mechanism, the function buttons will not operate if the cassette holder is not completely closed, if there is no cassette in the cassette holder, or if a cassette has been incorrectly inserted into the cassette holder.

On head cleaning

The head and tape path should be cleaned after every ten hours of operation. Dirty heads and a dirty tape path may cause:

— loss of high-frequency response
— loss of sound volume
— sound drop-out

If you have any questions or problems concerning your unit, please contact your nearest Sony dealer.

For detailed safety precautions, see the leaflet "IMPORTANT SAFEGUARDS".

Unpacking

Checking the Supplied Accessories

Make sure that the following accessories are included with your unit.

- Audio connecting cords (2)
- M3×8 screws (4)

Notes on Installation

- Place the unit with the front panel facing you in a location with adequate air circulation to prevent overheating of the unit.
- Do not place the unit:
  — near heat sources such as radiators or air ducts.
  — in places subject to direct sunlight, excessive dust, mechanical vibration or shock.
  — in an inclined position.
  — on a rug or other soft surfaces that would block the ventilation holes on the bottom of the unit.

Do not throw away the carton and the packing material They will come in handy when transporting the unit or shipping it for servicing.

Checking the Operating Voltage

- Operate the unit only on 120 V AC, 60Hz.
- Before operating the unit, be sure that the operating voltage of your unit is identical with that of your local power supply.

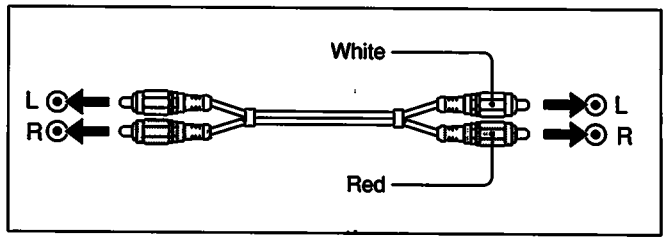
Detaching the Side Panels

If you choose to remove the side panels from the unit, do not reinsert the side panel screws into the cabinet holes. Use the shorter M3×8 screws (supplied) instead. For safety's sake, disconnect the AC power cord from the AC outlet before inserting the M3×8 screws into the cabinet holes.

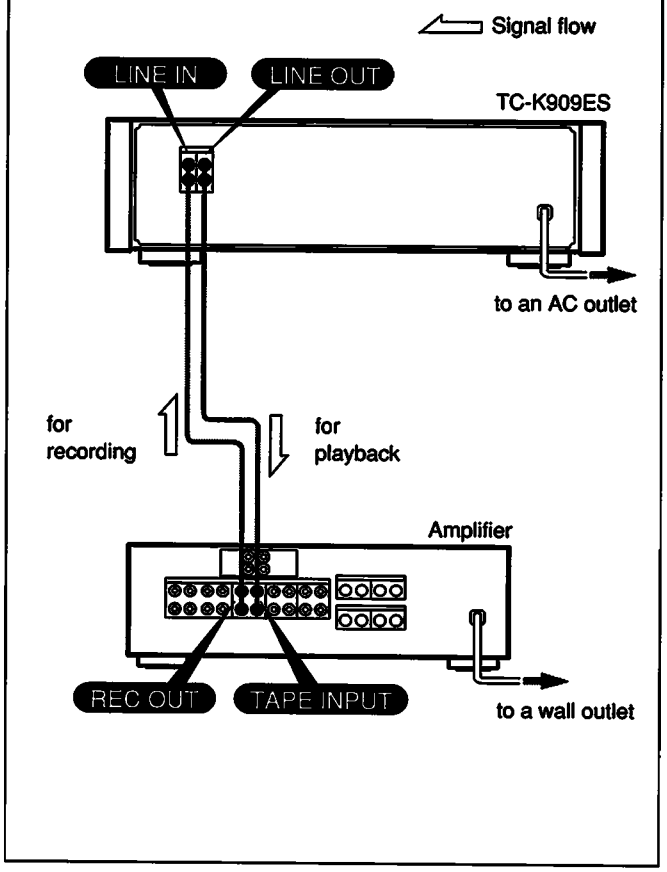
Hooking Up the System

Before You Begin

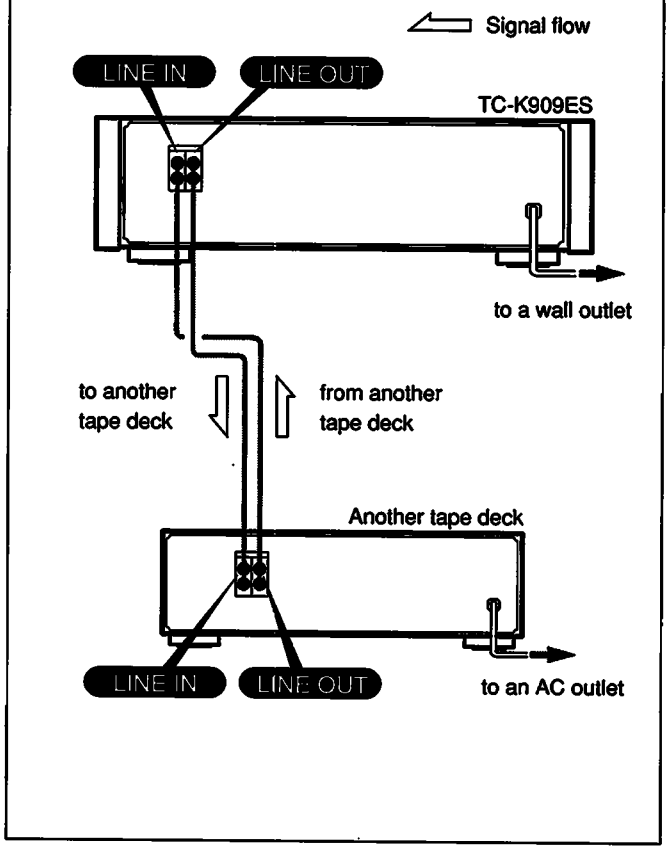
- Turn off the power to all equipment to be connected before making any connection.
- Note that the red plug of the supplied connecting cord is for right-channel (R) connection and the white plug for left-channel (L) connection.
- The connecting cords should be fully inserted into the jacks. A loose connection may cause hum pickup.



Hook-up Example

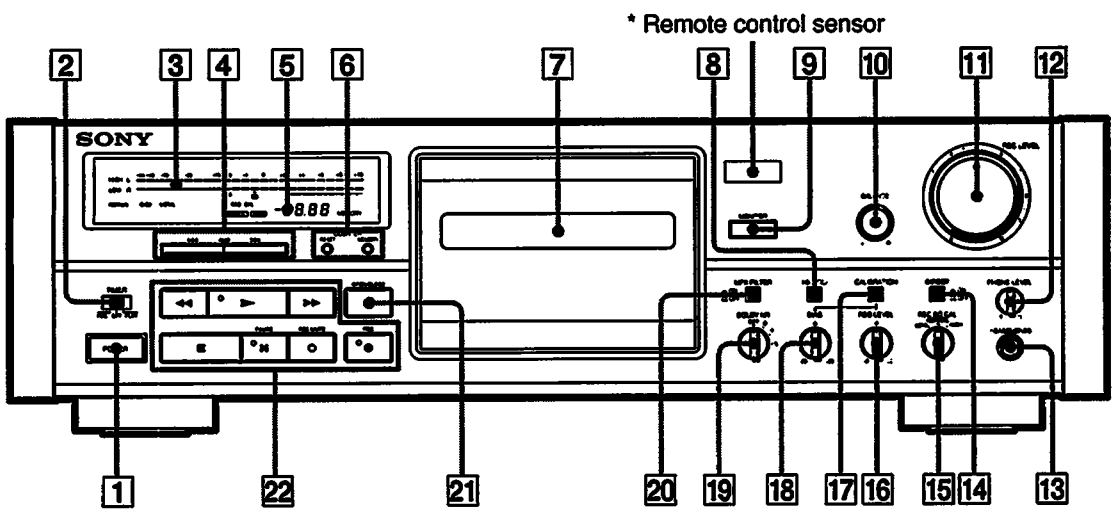


Hook-up for Tape Dubbing



Identifying the Parts

Front Panel



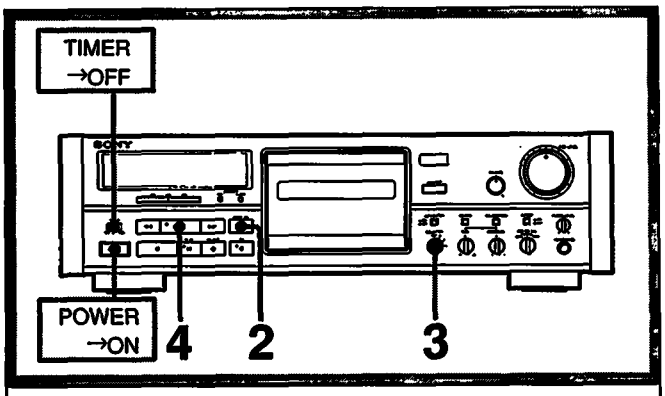
For details, refer to the page number(s) indicated in parentheses.

1 **POWER switch**
2 **TIMER switch (page 16)**
3 **Peak program meter (page 12)**
4 **AMS (Automatic Music Sensor) buttons (page 8)**
5 **Linear counter (page 9)**
6 **COUNTER buttons**
RESET button (page 9)
MEMORY button (pages 8 and 9)
7 **Cassette holder**
8 **HX PRO button (page 13)**
9 **MONITOR button (page 12)**
10 **BALANCE control (page 10)**
11 **REC (recording) LEVEL control (pages 10 and 12)**
12 **PHONE (headphones) LEVEL control**
13 **HEADPHONES jack (stereo phone jack) (page 7)**
14 **DIRECT button (pages 10 and 11)**
15 **REC EQ CAL (recording equalizing calibration) switch (LOW, NORMAL, HIGH) (page 15)**
16 **REC (recording) LEVEL control for calibration (pages 14 and 15)**
17 **CALIBRATION button (page 14)**
18 **BIAS control (pages 14 and 15)**
19 **DOLBY NR (noise reduction) switch (pages 7 and 10)**
20 **MPX FILTER button (page 12)**
21 **≜ OPEN/CLOSE button**
22 **Tape operation buttons and indicators**
◀◀ (rewind) button
▶ (play) button and indicator
▶▶ (fast-forward) button
■ (stop) button
II PAUSE button and indicator
○ REC MUTE (record muting) button (page 16)
● REC (recording) button and indicator

***Remote control sensor**
You can remotely control this cassette deck with:
— A remote commander that came with a Sony amplifier or receiver if it has the mark and cassette deck control capability.
— An optional Sony remote commander with the mark and cassette deck control capability.

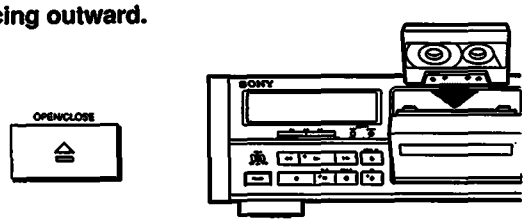
Playing Back

Follow the procedure below to play back a cassette.



1 **Turn on the amplifier and select the tape function.**

2 **Insert the cassette with the side to be played facing outward.**



3 **Set DOLBY NR to the same position that was used when the cassette was recorded.**

4 **Press PLAY to start playback.**

To stop playback, press the ■ button.
To stop playback momentarily, press the ❚❚ button.
To restart playback, press the ❚❚ or ► button.
To fastwind a tape rightward, press the ▶▶ button.
To fastwind the tape leftward, press the ◀◀ button.

Set the TIMER switch to OFF
Otherwise, playback will start automatically when the power is turned on.

Is it necessary to set the tape type being used?
No. The deck has an automatic tape type detection system.

To start operations while the cassette holder is open
Operations may be started while the cassette holder is open. For example, when the ► button is pressed while the cassette holder is open, the cassette holder will close and playback will start. Similarly, pressing the ◀◀, ▶▶, or ❚❚ buttons while the cassette holder is open will close the cassette holder and start the respective operation.

To change to recording mode during playback
Keeping the ► button pressed, press the ● button. The unit immediately switches from playback to recording without stopping the tape. This is useful when editing previously recorded material.

For headphone listening
Connect the headphone plug to the HEADPHONES jack. The listening level can be controlled with the PHONE LEVEL control.

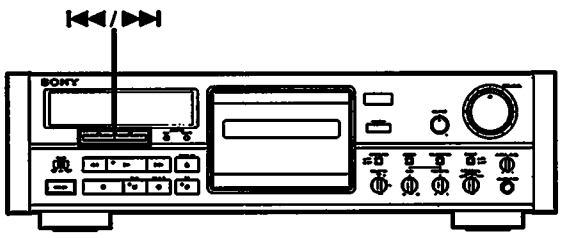
Is it necessary to set the MONITOR button for playback?
No. The TAPE mode is automatically selected and TAPE is displayed.

What is the Dolby NR system?
The Dolby NR (noise reduction) system reduces tape hiss noise in low-level, high-frequency signals by boosting the signals during recording and lowering them during playback. The Dolby S NR system provides the highest reduction in tape hiss noise in both low and high frequencies.

Note
The Dolby HX PRO system is effective only during recording, not during playback.

Locating a Selection — Automatic Music Sensor (AMS)

The AMS function detects the blank space between selections, allowing you to quickly locate the beginning of desired selections.



During playback, press ▶▶I or I◀◀ referring to the following table.

Desired selection	
Next selection	Selection being played
▶▶I	I◀◀

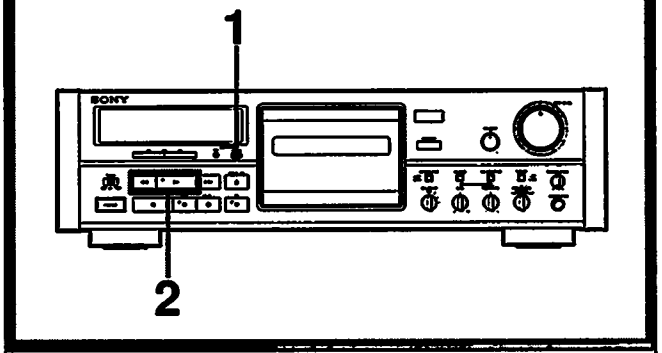
The PLAY indicator flashes while the AMS searches for the beginning of the selection. After locating the beginning of the selection, playback will start automatically.

The AMS may skip a selection in the following cases:
- If the ▶▶I (or I◀◀) button is pressed immediately before the following selection.
- If there is noise in the space between selections.
- If the space is less than four seconds long.

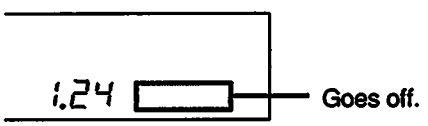
The AMS will treat the following as blanks:
- a long pause in the music
- a passage of low frequencies or very low volume
- a gradual increase or decrease in volume

Starting Playing Back After Rewinding — Auto Play

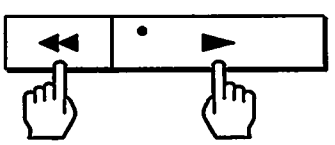
The Auto Play function automatically starts playing back a cassette after fast winding it to the beginning.



1 **Make sure the MEMORY indicator is off.**
If it is not, press MEMORY.



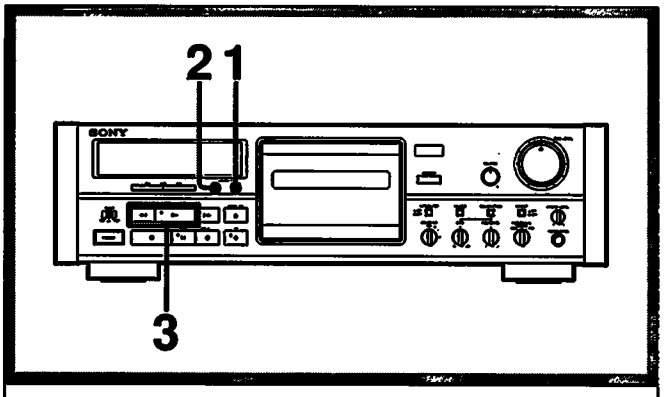
2 **While pressing ►, press ◀◀.**



Locating a Desired Playback Position — Memory Play

How to Memorize and Locate a Desired Playback Position

The Memory Play function allows you to use the counter to record a desired position on a cassette for fast relocation and automatic playback later.



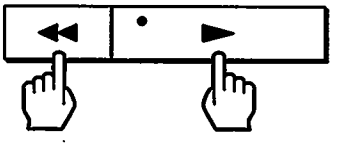
1 **Press MEMORY to activate the Memory Play function.**

MEMORY

2 **Press RESET to reset the counter at the desired position.**
The desired position is memorized.

RESET

3 **While pressing ►, press ◄◄ to return to the desired position.**



Returning to the memorized position in stop mode — Memory Stop
If you press only the ◄◄ button when the MEMORY indicator is on in the stop mode, the tape rewinds and the unit stops when the counter reaches 0.00.

To deactivate the Memory Play function
Press the MEMORY button, turning off the MEMORY indicator.

Note on Memory Play/Stop
In actuality, the tape is rewound to slightly short of 0.00.

Do not turn off the power while using the counter
Turning the power off, then on again resets the counter to 0.00.

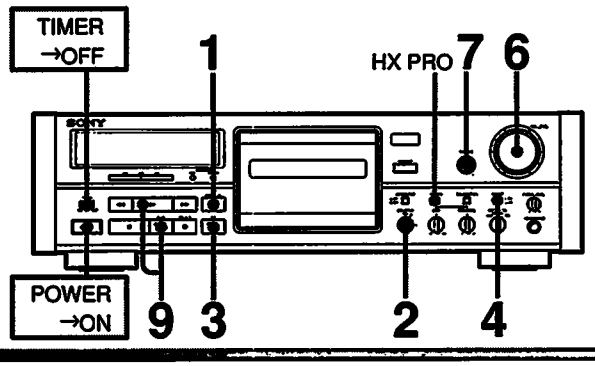
The Accuracy of the Linear Counter

Since the counter is not a digital clock, the number will differ from the actual elapsed playback or recording time by a few minutes, depending on such factors as tape length and hub size.

Recording

How to Record to a Cassette

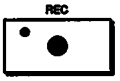
Follow this procedure to record a source on a cassette.



1 **Insert a cassette with the side to be recorded facing outward.**
(Refer to pages 14 to 15 to calibrate the bias current and recording level if desired.)

2 **Set DOLBY NR.**

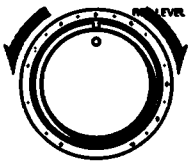
3 **Press ● to enter the recording pause mode.**



4 **Set DIRECT to ON (if recording from a CD player).**

5 **Play the program source to be recorded.**

6 **Turn REC LEVEL to adjust the recording level.**



See **"Adjusting the Recording Level"** on page 12.

7 **Turn BALANCE to adjust the balance.**
(If ON is selected in step 4, the BALANCE control is rendered inoperative.)

8 **Restart the program source, if required.**

9 **Press II or ► to start recording.**

To stop recording
Press the ■ button.

Recording with the Dolby HX PRO system
Press the HX PRO button to turn on the Dolby HX PRO function (see page 13). Use the MONITOR button to verify the effects of the function.

Regarding the DIRECT button
Setting the DIRECT button to ON shortens the signal path. The result is a higher quality recording.
The shorter path, however, renders the BALANCE control inoperative.

If playback starts instead of recording
The cassette tab for that side has been removed. To record on this cassette, cover the hole with plastic tape.
(See "To Protect a Recording" on the right.)

Set the TIMER switch to OFF
Otherwise, recording will start automatically when the power is turned on.

Is it necessary to set the MONITOR button for recording?
No. The source mode is automatically selected and SOURCE is displayed. If you wish to monitor the recorded sound, press the MONITOR button to select the TAPE mode.

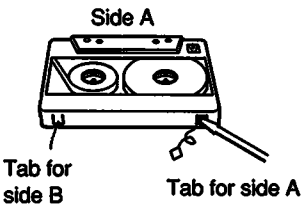
To start recording while the cassette holder is open
If you press the ● button while the cassette holder is open, the holder will close automatically and the unit will switch to recording pause mode. This function allows you to start recording at a moment's notice.

Checking the recording time on a tape
To check the remaining recording time on a tape:
1 Press the RESET button to reset the counter to 0.00.
2 Press ▶▶ to advance the tape to its end. The number on the counter shows the approximate recording time.

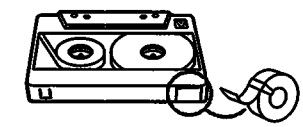
To check the total recording time of a tape, first rewind the tape to its beginning, then follow the same steps as above.
(See "The Accuracy of the Linear Counter" on page 9.)

To Protect a Recording

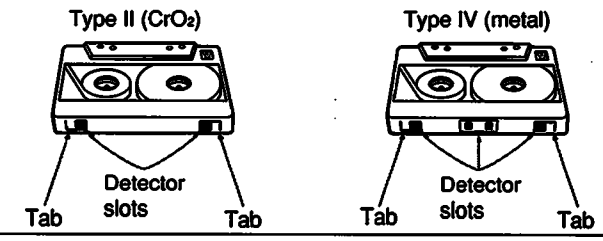
To protect a recording on side A or B
Break out the respective tab.



To recover a cassette for recording
Cover the respective slot with tape.



When using Type II (CrO_2) or Type IV (metal) cassettes
Be careful not to cover the detector slots which are necessary for automatic tape detection.



Cassette care
- Avoid touching the tape surface of a cassette to prevent contamination of the heads by dirt, dust, or oil on the skin.
- Keep cassettes away from equipment with magnets, such as speakers and amplifiers, as erasure or distortion on the recorded tape could occur.
- Do not expose cassettes to direct sunlight, extremely cold temperatures or moisture.

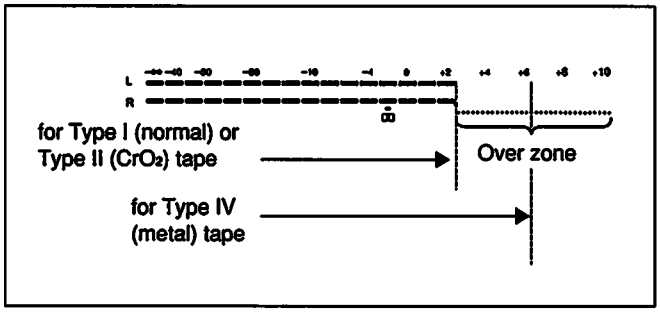
Note on cassettes longer than 90 minutes
The use of cassettes longer than 90 minutes is not recommended except for long continuous playback.

Recording

Adjusting the Recording Level

The optimum recording level, which differs according to the tape type, is indicated on the peak program meter for each tape type.
Adjust the recording level so that the peak program meter reaches its highest point with the least intrusion into the red (over) zone.

Peak program meter readings by tape type
Recommended maximum peak program meter readings.



Tips on recording level adjustment
Setting the recording level too low will produce a hissing sound, while setting it too high will produce distortion.
Generally, the optimum recording level for high and low frequencies is lower than that for middle frequencies.
Therefore, when recording program sources with many high and low frequencies, you should set the level to a relatively low position. For even better results, check the recording results with your own ear.

Recording FM Broadcasts With the Dolby NR System

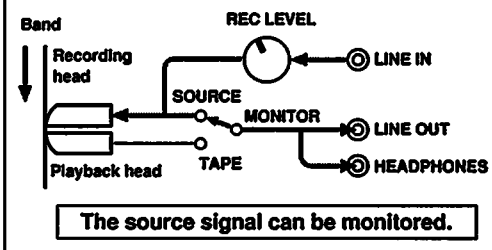
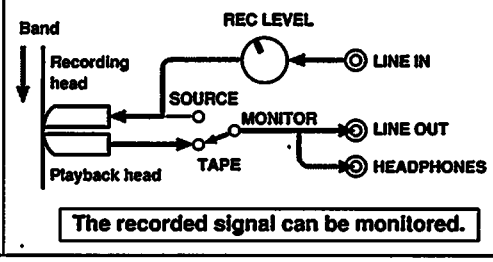
When recording FM broadcasts with the DOLBY NR system, set the MPX FILTER button to ON.
The MPX filter eliminates remnants of the 19-kHz stereo carrier and 38-kHz subcarrier signals which may impair the operation of the DOLBY NR system. Be sure that the Dolby NR switch is turned on since the MPX filter will not function otherwise. During recording with the Dolby NR system, use this switch only if the tuner is not equipped with its own MPX filter or the equipped filter does not function effectively.

Monitoring the Recorded Sound

As this unit has three separate heads for recording, playback and erasure, you can check the quality of a recorded sound by comparing it with the input source signal.

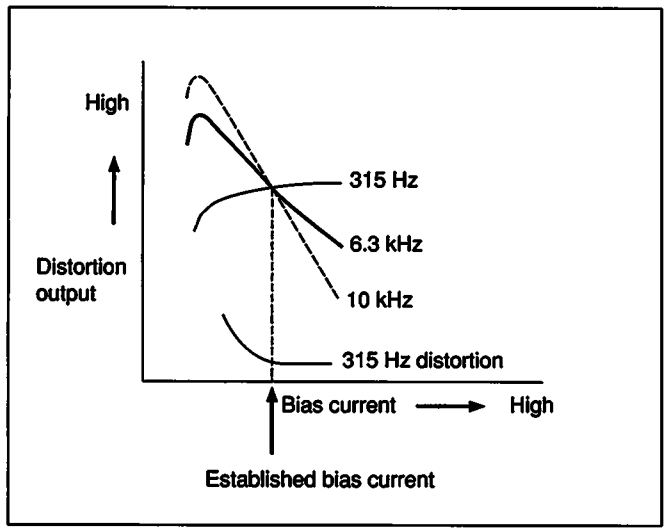
To listen to the input source signal, press the MONITOR button to turn on the SOURCE indicator.
To listen to the sound recorded on the tape, press the MONITOR button to turn on the TAPE indicator.

Comparing the recorded sound with the sound source
While recording, use this monitoring function to check that there is no distortion due to excessive level settings or sound degradation due to head contamination.

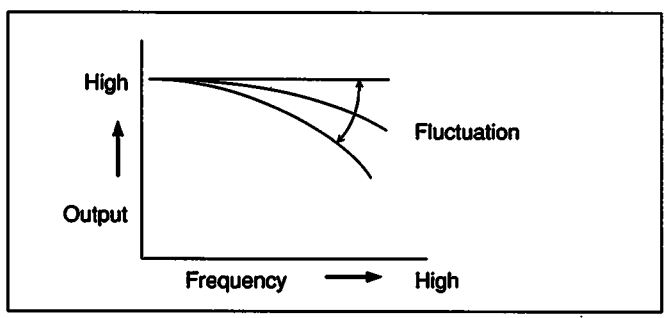
MONITOR setting	Signal flow
SOURCE	
TAPE	

What Is the Dolby HX PRO System?

The Dolby HX PRO system provides improved linearity in high-range frequency response during recording. Tapes recorded with this system retain the same high quality even when played back on other tape decks.
As shown below, characteristics such as output level and distortion differ widely according to the bias (high-frequency) current.



In conventional systems (see diagram below), the bias current is susceptible to variations in certain recording signals which may cause fluctuations in frequency response, distortion, or other unwanted characteristics.

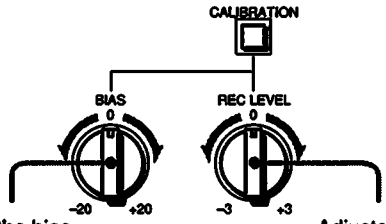


With the Dolby HX PRO system, the effective bias amount added to the bias current is controlled in millisecond units to greatly reduce distortion, improving linearity in high-range response and ensuring high-intensity recording with minimal distortion and noise.

Making an Optimum Recording

Bias and Recording Level Calibration

Though your unit is equipped with the ATS (Automatic Tape Selection) system which sets the appropriate equalization characteristics and bias current for each tape type, an additional calibration adjustment can often produce even better results. Use the bias current and recording level calibration function to obtain the optimum recording conditions for your tape.

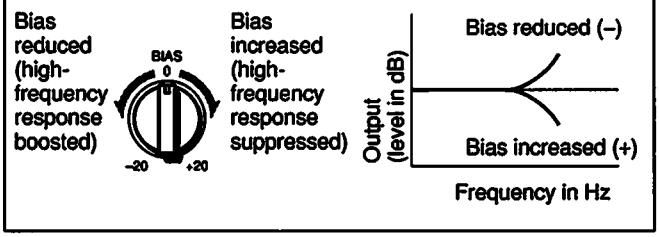


Adjusts the bias current within a range of about ±20%

Adjusts the recording level within a range of about ±3dB

Bias calibration

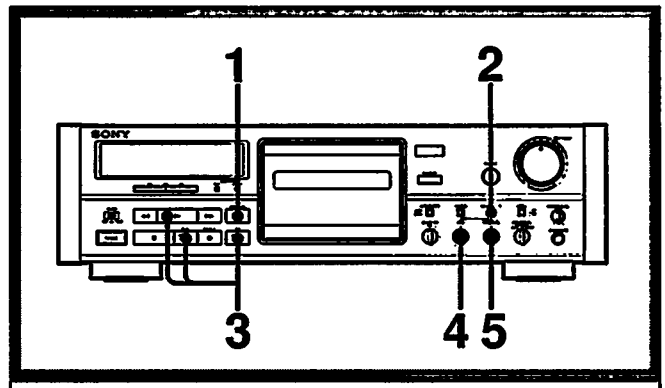
Choosing the optimum bias current for a tape ensures minimum distortion and flat frequency response. Lowering the bias current boosts high-frequency response, but also results in higher distortion. Raising the bias, on the other hand, reduces distortion, but also dampens high-frequency response. Optimum bias is thus obtained when the bias current and high-frequency response are well balanced.



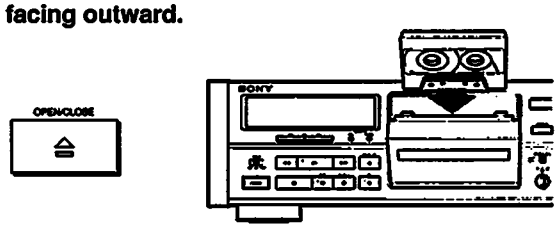
- By changing the bias, you can tailor the response to your liking, for example by slightly emphasizing the upper or lower end.
- The frequency response of metal tapes is much less affected by changes in the bias current than other tape types, and in some cases is uneffected. With some tapes, the adjustment range of this deck (a range of about ±20%) may therefore not be sufficient to cover every possible requirement.

Recording level calibration

Even when the recording level is adjusted correctly, using a tape with low sensitivity will result in a low playback level. The REC LEVEL calibration control allows you to compensate for sensitivity differences among tapes to equalize both recording and playback levels. This is especially important when using the Dolby NR system, since it is most effective when recording and playback levels are the same.



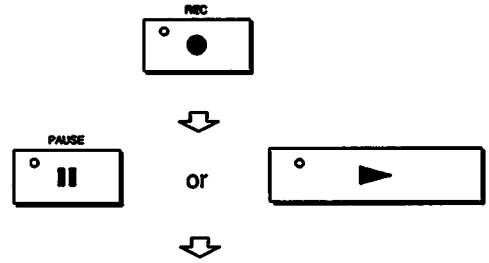
1 **Insert a cassette with the side to be recorded facing outward.**



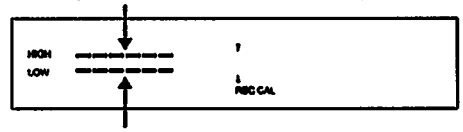
2 **Press CALIBRATION.**

The peak program meter for adjusting the bias and recording level appears in the display window.

3 **Press ●, then II or ► to activate the recording test tones:**



Playback level for an 8-kHz signal



Playback level for a 400-Hz signal

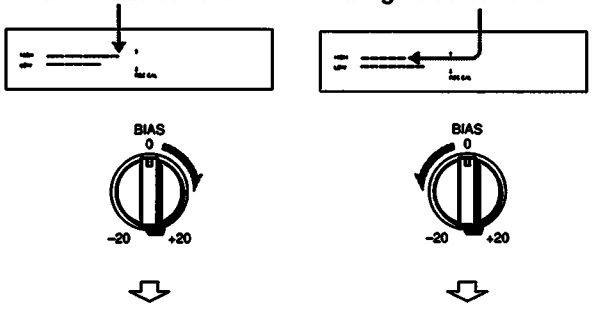
Notes

- The sound cannot be monitored during the calibration operation.
- It takes 2 to 3 seconds for the test tone level to stabilize.

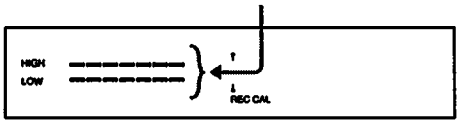
4 Adjust BIAS until both meters indicate equal playback levels.

A high reading on the upper meter indicates a low bias current.

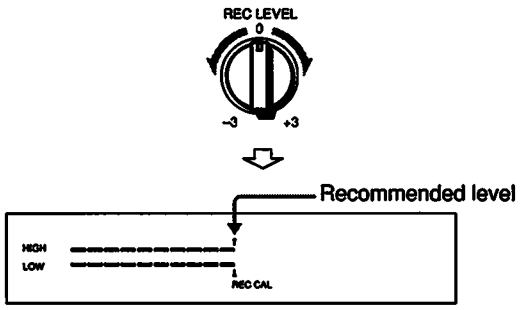
A low reading on the upper meter indicates a high bias current.



An equal reading on both meters indicates the optimum bias current condition.



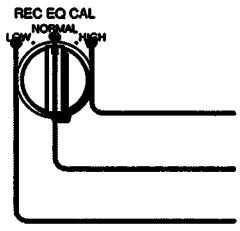
5 Adjust REC LEVEL calibration until both readings reach the recommended level.



The bias current is now adjusted to the optimum level and the tape sensitivity compensation has been set. Press ■, then press CALIBRATION to turn the calibration function off. Rewind the tape and start the actual recording.

Recording Equalization Calibration

Although bias currrent and equalization are automatically set by the Automatic Tape Selection (ATS) function for the tape being used, you can use the REC EQ CAL switch to change the recording characteristics according to the nature of the source material or to compensate for the particular characteristics of the tape.



To emphasize higher frequencies in recordings

For normal recordings

To dampen higher frequencies in recordings

Bias calibration recording

Use the REC EQ CAL switch in conjunction with the BIAS control to modify bands of sound and record according to the tape's characteristics.

- **When recording music which has strong middle and low frequencies**
  Set the bias at flat with the REC EQ CAL switch set in the HIGH position to increase the bias current.
  Adjust the BIAS control so that the HIGH and LOW meters indicate equal readings.

- **When recording music which has strong high frequencies**
  Set the bias at flat with the REC EQ CAL switch set in the LOW position to decrease the bias current.
  Adjust the BIAS control so that the HIGH and LOW meters indicate equal readings.

Note

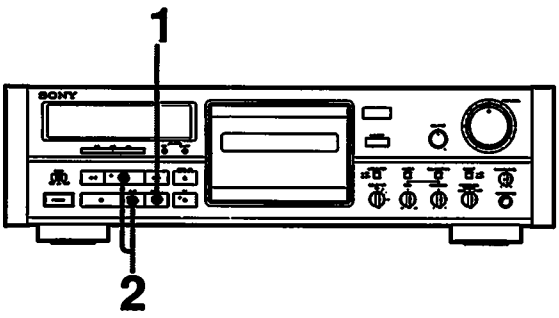
With metal tape, because the amount of frequency characteristic modulation is not in proportion to that of the bias, the optimum bias current may not be obtained using the methods above.

Another use of the REC EQ CAL switch

When using special tapes, adjusting the BIAS control with the REC EQ CAL switch set in the NORMAL position may not result in equal readings on the HIGH and LOW meters. If this occurs, adjust the BIAS control after setting the REC EQ CAL switch to HIGH or LOW.

Inserting a Blank Space During Recording — Record Muting

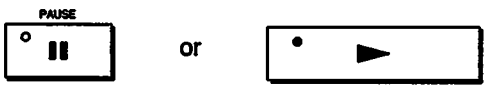
The Record Muting function allows you to insert a four-second blank to enable proper AMS operation (see page 8), and to replace unwanted input with a blank of any desired length.



1 While recording, press O and release it immediately.

The REC indicator starts flashing. During this time, no incoming signals are recorded on the tape.
After four seconds, the II indicator lights up and the unit enters recording pause mode.

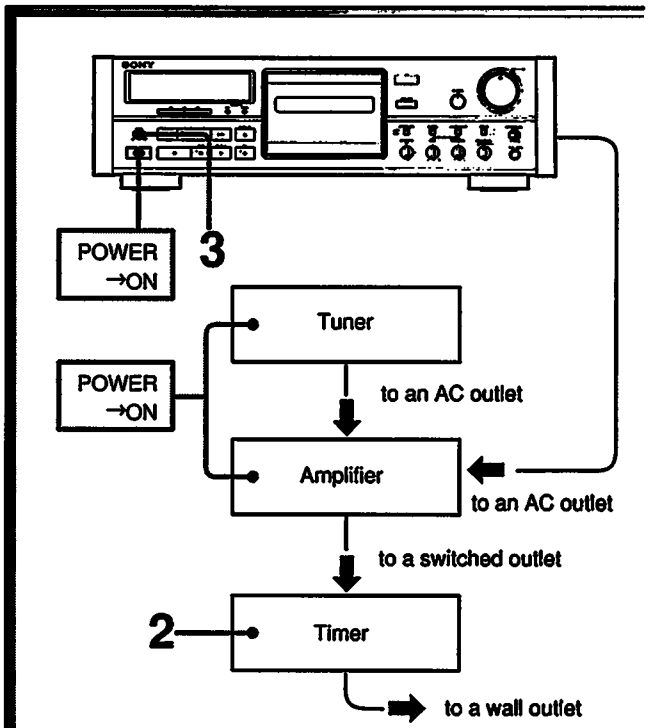
2 Press II or ► to resume recording.



To create a blank longer than four seconds
Press the O button for the desired length of time. After four seconds, the REC indicator flashes with greater rapidity. When you release the O button, the II indicator lights up and the unit goes into recording pause mode.
Press the II or ► button to resume recording.

Timer-Activated Playback and Recording

By connecting an optional timer, recording or playback can be performed automatically at a preset time.



1 Prepare the unit for playback or recording.

For playback	Follow steps 1 through 3 on page 7.
For recording	Follow steps 1 through 7 on page 10.

After completing the preparations, press ■ to change the unit to stop mode.
Make sure to close the holder completely.

2 Set the timer to the desired time.
Power to the tape deck will be cut off.

3 Set TIMER to PLAY or REC.
Playback or recording will start at the preset time.

Keep the POWER switch on the unit on
When the timer is set, the power to the unit will be cut off. However, the POWER switch must be on to start timer-activated operation.

When the timer-activated operation is completed
Set the TIMER switch on the unit to OFF. If the TIMER switch is left at REC, the unit will automatically start recording the next time the power is turned on, and the previously recorded material may be erased.

Maintenance

Cleaning the Heads and Tape Path

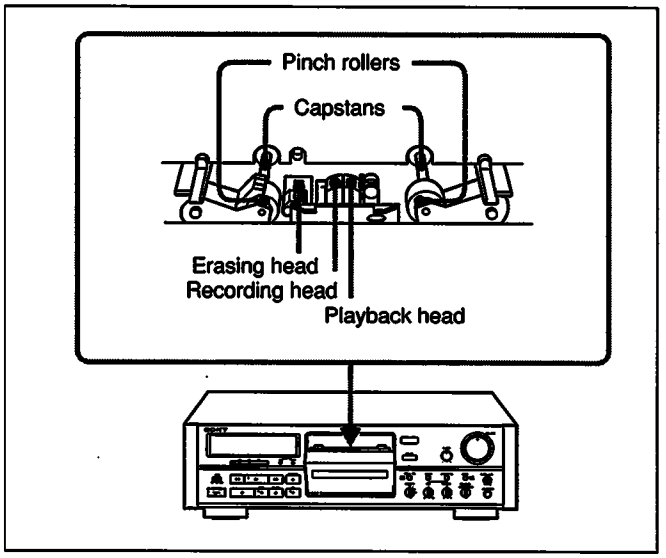
Clean all surfaces over which the tape travels after every ten hours of operation to guard against:
- — low-quality sound
- — a decrease in sound level
- — excessive wow, flutter or drop-out
- — incomplete erasure
- — impairment of recording function

To obtain high-quality recorded sound, cleaning before every recording is recommended.

1 With the unit turned off, hold down ⏏ and press the POWER switch. This causes the holder to open, the heads to rise and the pinch rollers to rotate.

2 Wipe the heads, the pinch rollers and the capstans with a cotton swab slightly moistened with alcohol or a commercially available cleaning fluid for tape decks.

Clean the entire surface of the pinch rollers and capstans while they are rotating, making sure that the cotton swab does not get caught in the mechanism.



3 When completed, press ⏏ again.

Do not insert a cassette until the cleaned areas are completely dry.

Demagnetizing the Heads

After 20 to 30 hours of use, or when you notice hiss and/or loss of high frequencies, the residual magnetism built up on the heads should be removed.

1 With the unit turned off, hold down ⏏ and press the POWER button to open the holder. Confirm that the heads have risen, then press the POWER button again.

2 Demagnetize the heads with any commercially available demagnetizer.

Refer to the instruction manual of the demagnetizer for detailed instructions.

Cleaning the Cabinet

Clean the cabinet, panel and controls with a soft cloth slightly moistened with a mild detergent solution.
Do not use any type of abrasive pad, scouring powder or solvents such as alcohol or benzine.

Specifications

Recording system	4-track 2-channel stereo
Fast winding time	Approx. 90 sec. (with Sony C-60 cassette)
Bias	AC bias
Heads	Erasing head × 1 (S&F head) Recording head × 1 (LA head) Playback head × 1 (LA head)
Motors	Capstan motor × 1 (direct-drive linear torque BSL motor) Reel motor × 1 (DC motor) Assist (mechanism drive) motor × 1 (DC motor)
Wow and flutter	±0.04% W.Peak (IEC) 0.022% W.RMS (NAB) ±0.065% W.Peak (DIN)

Signal-to-noise ratio (at peak level and weighted)

Cassette (Dolby NR off)	Type IV	Type II	Type I
	61 dB	59 dB	57 dB

S/N ratio improvement (approximate values)
With Dolby B NR on: 5 dB at 1 kHz; 10 dB at 5 kHz
With Dolby C NR on: 15 dB at 500 Hz; 20 dB at 1 kHz
With Dolby S NR on: 10 dB at 100 Hz; 24 dB at 1 kHz

Harmonic distortion 0.4% (with Type I, 160nWb/m, 315Hz, 3rd H.D.)
1.3% (with Type IV, 250nWb/m, 315Hz, 3rd H.D.)

Frequency response (Dolby NR off)

Type IV cassette	15 - 22,000 Hz (±3 dB, IEC) 15 - 16,000 Hz [±3 dB, (-4dB recording)]
Type II cassette	15 - 20,000 Hz (±3 dB, IEC)
Type I cassette	15 - 17,000 Hz (±3 dB, IEC)

Cassette
Type IV : Sony ES-IV
Type II : Sony UX-S or UX
Type I : Sony HF-S

Inputs

Line inputs (phono jacks)	Sensitivity	0.16 V
	Input impedance	47 k ohms

Outputs

Line outputs (phono jacks)	Rated output level	0.5 V at a load impedance of 47 k ohms
	Load impedance	Over 10 k ohms
Headphones (stereo phone jack)	Output level	0 - 3 mW at a load impedance of 32 ohms

General

Power requirements	120 V AC, 60 Hz
Power consumption	26 W
Dimensions	Approx. 470 × 135 × 350 mm (w/h/d) (18⅝ × 5⅜ × 13⅞ inches) including projecting parts and controls
Mass	Approx. 8.2 kg (18 lbs 2 oz)

Supplied accessories
Audio connecting cords (2)
M3×8 screws (4)

Design and specifications are subject to change without notice.

Troubleshooting Guide

The following trouble checks will help you correct the most common problems encountered with your tape deck. Should any problems persist after you have made these checks, consult your nearest Sony dealer.

Before proceeding with these trouble checks, verify that:
- The power cord is firmly connected.
- Amplifier connections are firmly made.
- Heads, capstans and pinch rollers are clean.
- The amplifier controls and switches are set correctly.

Function Buttons and Tape Transport Problems

Symptom	Cause	Remedy
The function buttons do not activate.	The cassette holder is not fully closed.	Close the holder completely.
	The cassette is not properly inserted.	Insert cassette correctly.
	Button was pressed immediately after the power was turned on.	Wait until the ▮▮ indicator stops flashing.
Playback or recording begins when the power is turned on.	The TIMER switch is not set to OFF.	Set the TIMER switch to OFF.
The ● button does not activate.	There is no cassette in the holder.	Insert a cassette.
	A tab has been removed from the cassette.	Cover the slot with tape (page 11).
Automatic shut-off mechanism activates before the tape comes to its end.	The tape is slack.	Take up the tape slack.
	The cassette shell is deformed.	Use another cassette.
	The Memory Play function is activated.	Press the MEMORY button to deactivate the function.
Excessively loud tape transport noise during fast winding.	This noise is caused by the cassette and does not signify a mechanical problem.	—
The cassette holder will not close.	There has been a power failure or the power cord has been disconnected while the cassette holder is open.	Reconnect the power.
The ⏏ botton does not function.	There has been a power failure or the power cord has been disconnected.	Reconnect the power.

(Continued on next page.)

Troubleshooting Guide

(Continued from previous page.)

Recording and Playback Problems

Symptom	Cause	Remedy
Recording or playback cannot be made or there is a decrease in sound level.	The heads are either dirty or magnetized.	Clean or demagnetize the heads (page 17).
	Improper connection.	Make connections properly (page 5).
	Improper setting of the amplifier controls.	Set the amplifier controls to the appropriate positions.
	The CALIBRATION function is on.	Press the CALIBRATION button to turn it off.
Excessive wow, flutter or drop-out.	The head, capstan or pinch roller is dirty.	Clean in accordance with instructions on page 17.
Incomplete erasure.	The erasing head is dirty.	Clean the erasing head (page 17).
Increased noise or poor reproduction in high frequencies.	The heads are magnetized.	Demagnetize the heads (page 17).
Unbalanced tone in high frequencies.	Improper setting of the DOLBY NR switch.	During playing back, set the switch to the same position used in recording.
	The unit is placed near a television set.	Move the unit away from the television set.
The desired selection cannot be located even though you activate the AMS.	There is noise in the space between selections. The space is less than four seconds long.	Rerecord the tape if you can, and insert a blank space of four seconds using the ○ button (page 16).
	The ▶▶I or I◀◀ button was pressed immediately before the beginning of the following selection.	—
Playback begins in the middle of the selection when the AMS is activated.	The selection contains one of the following: — a long pause in the music — a passage of low frequencies or very low volume — a gradual increase or decrease in volume.	While the tape is playing, press the ▶▶I or I◀◀ button again.

Noise

Symptom	Cause	Remedy
Hum noise.	The unit is stacked on or under the amplifier.	Separate the unit.
Noise is recorded.	The recording was made near equipment such as a television set or a color monitor, and interference has affected the recording on the tape and the Dolby NR system.	Move the unit away from the television set or color monitor.

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